

Traversing Incore Probe System (TIP)

304B Chapter 5.6

Objectives

1. Identify the purpose of the TIP system.
2. Recognize the purpose, function and operation of major system components:
 - a) TIP detectors
 - b) storage locations
 - c) drive mechanisms
 - d) ball and shear valves
 - e) indexing mechanisms
 - f) TIP purge system

Objectives (continued)

3. Explain the system's interfaces with:

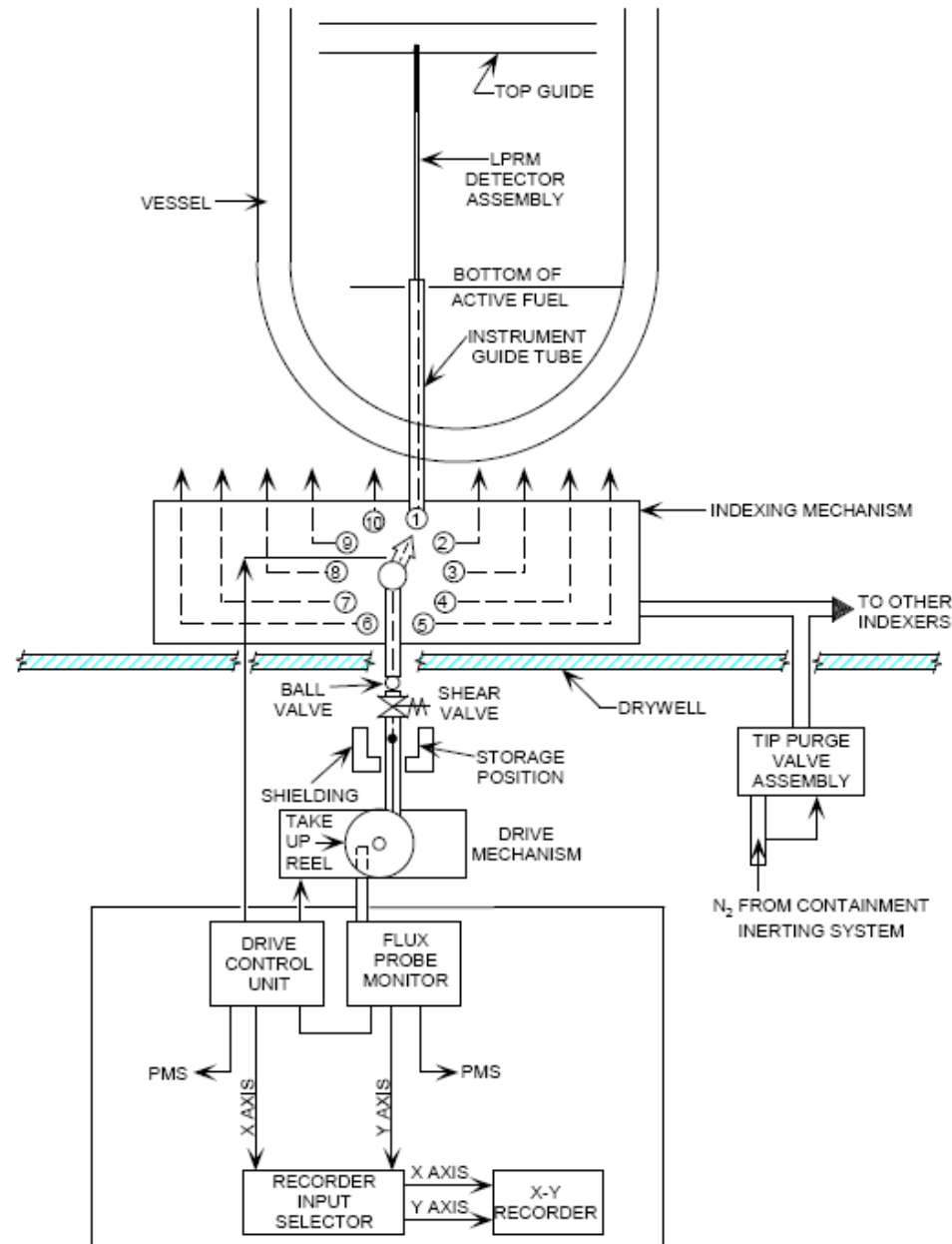
- a) Local Power Range Monitoring (LPRM) System
- b) Process Computer System
- c) Service and Instrument Air System
- d) Nuclear Steam Supply Shutoff System (NSSSS)
- e) Containment Inerting System

Purpose

The purpose of the TIP system is:

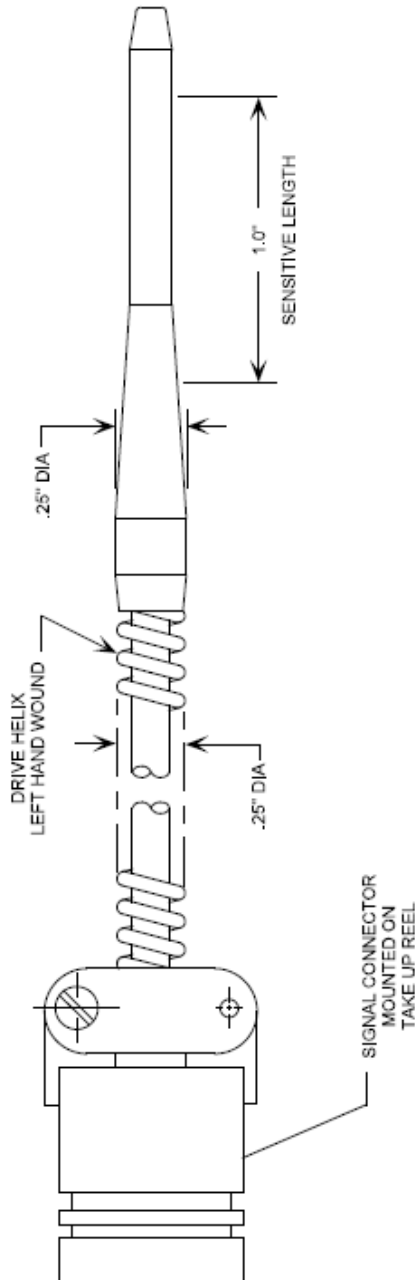
- o To provide a means of obtaining the axial and radial neutron flux distribution within the reactor core.

Overview



**Schematic
for one TIP
machine
(typical of 4
total
machines)**

TIP Detectors

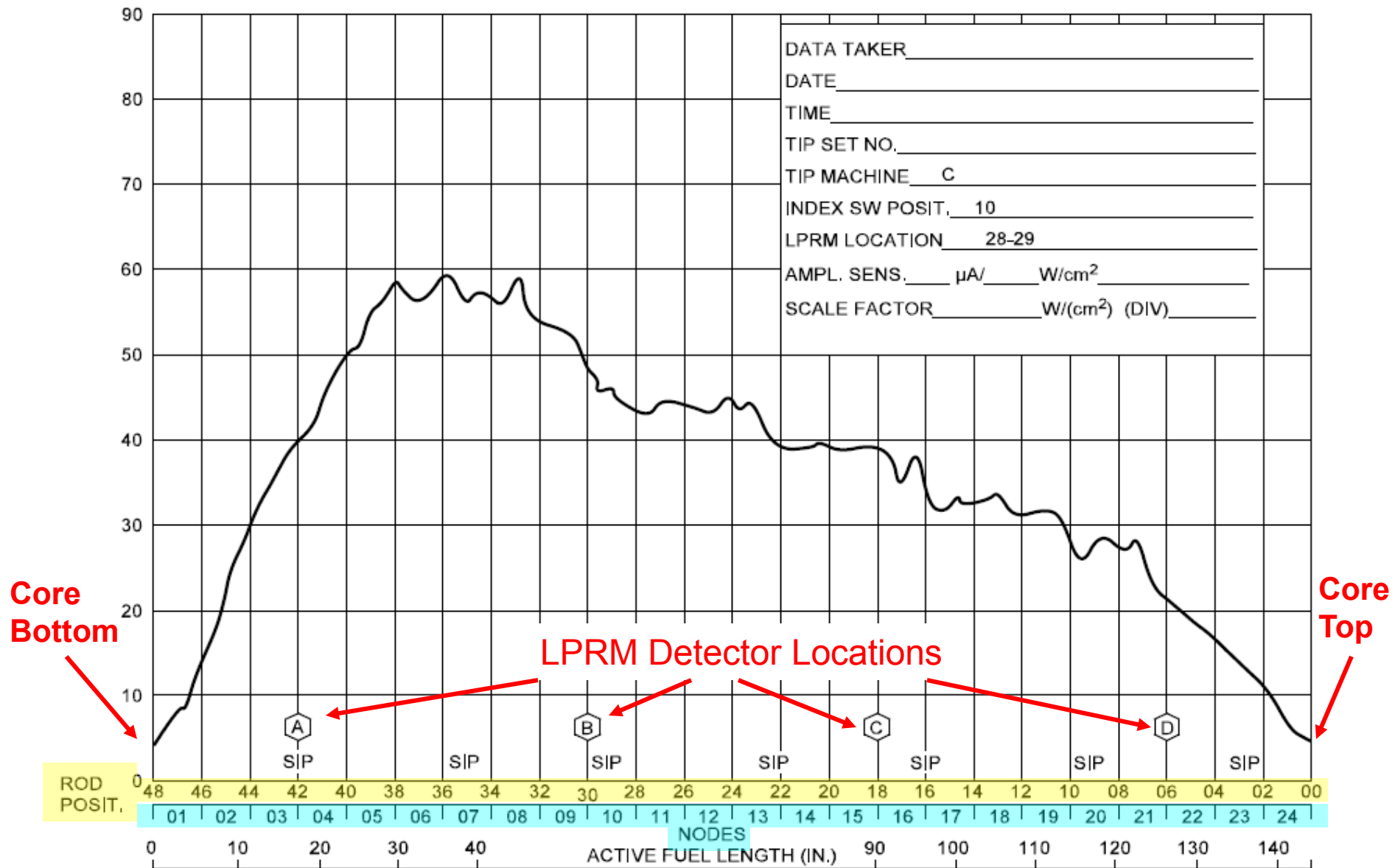


Each of the four TIP detectors consists of a fission chamber with characteristics similar to an LPRM detector connected to a triaxial cable about 140' long.

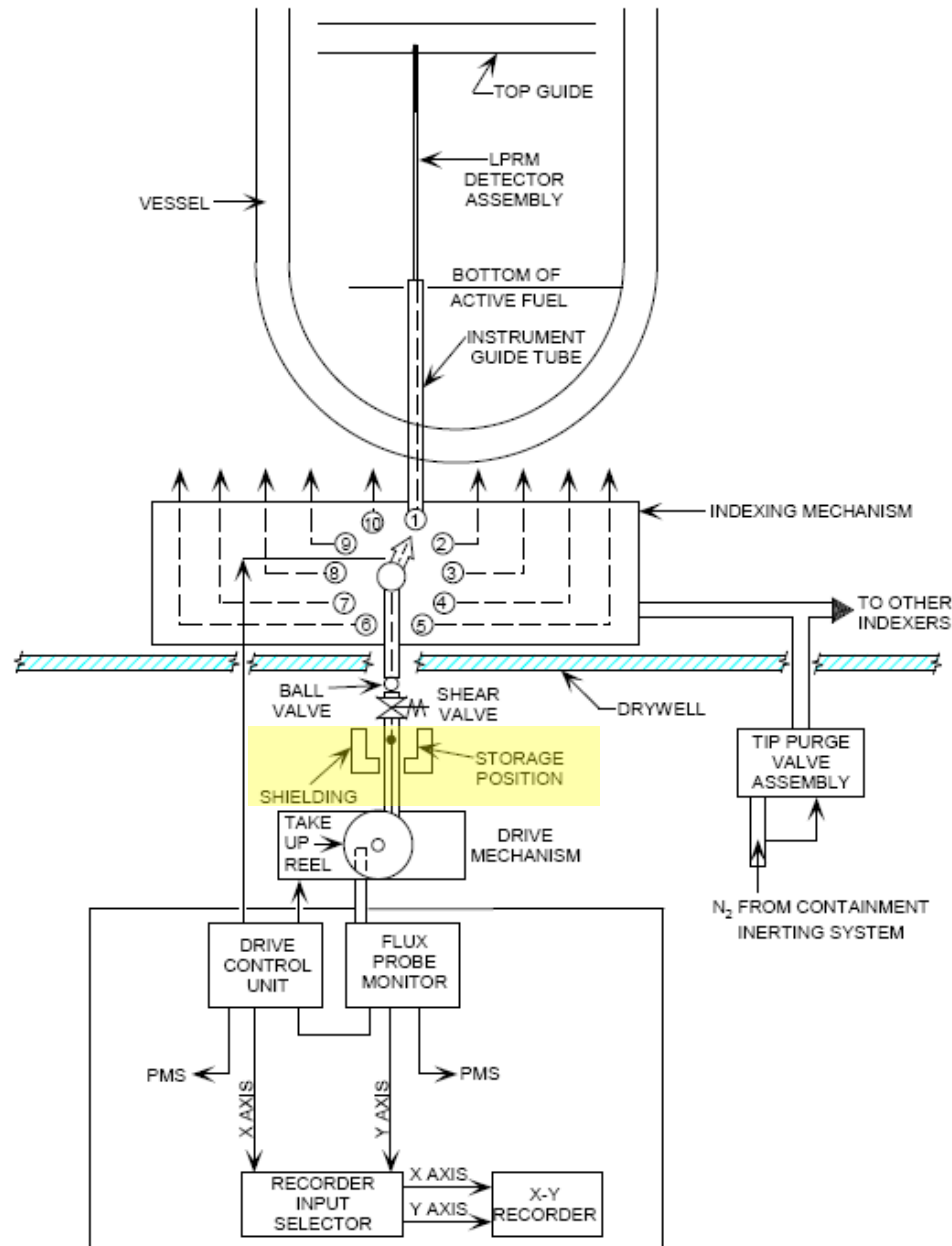
A TIP detector is driven to the top (core top) of a dry guide tube containing an LPRM string of 4 detectors. During its withdrawal, the TIP detector provides axial neutron flux level information to the process computer and/or chart recorder.

All four TIP detectors can scan the central LPRM string (28-29) along with one quadrant of other LPRM strings.

TIP Trace



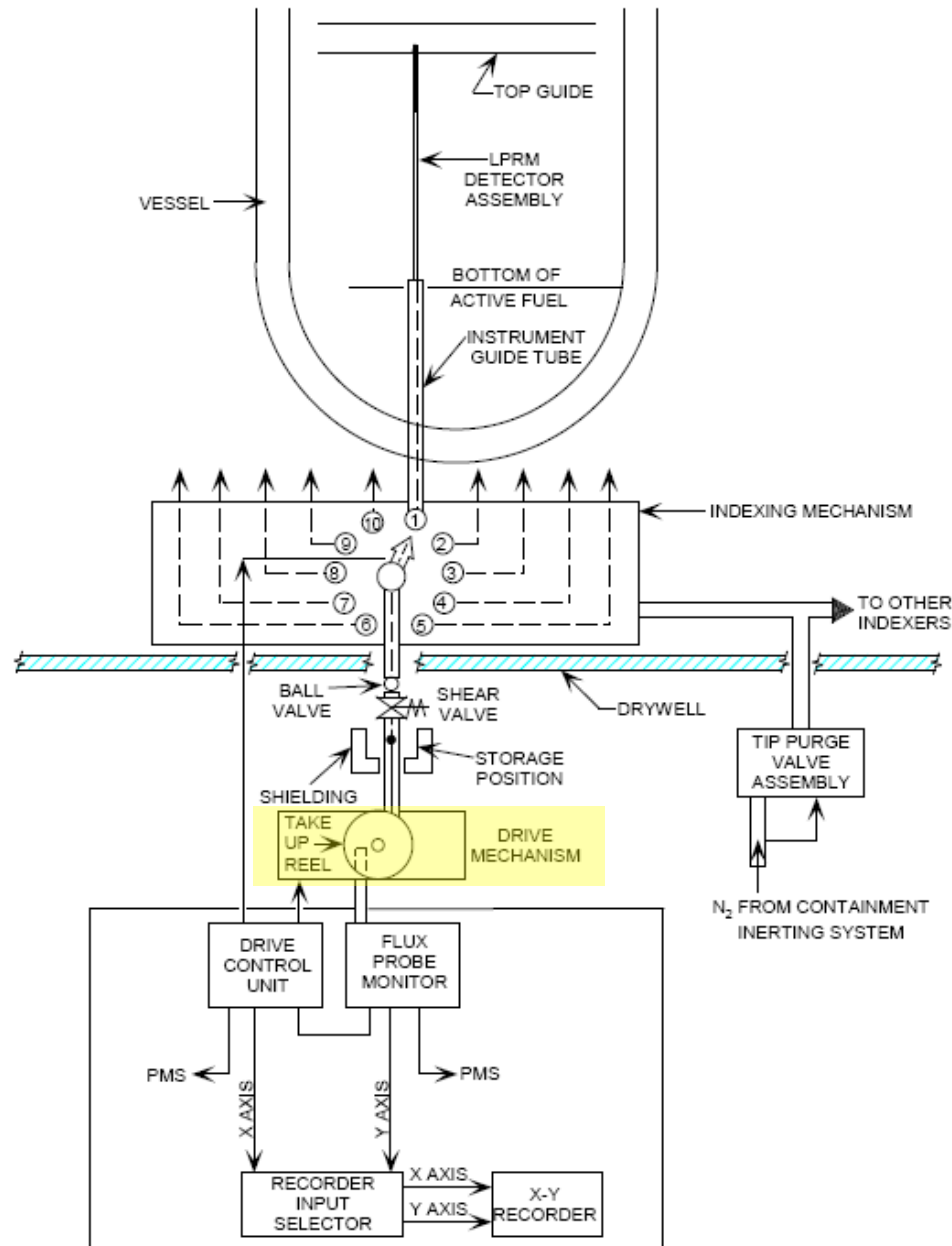
Storage Locations



**Schematic
for one TIP
machine
(typical of 4
total
machines)**

Objective 2b

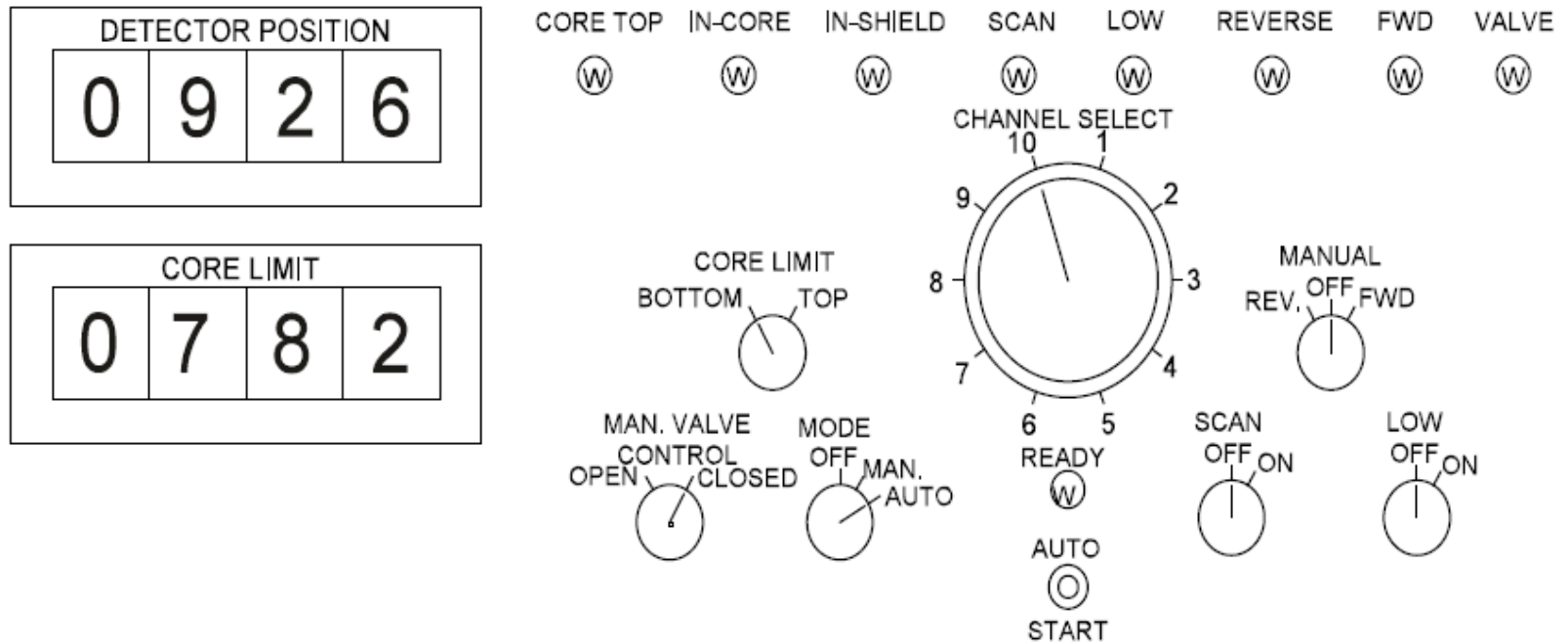
Drive Mechanisms



**Schematic
for one TIP
machine
(typical of 4
total
machines)**

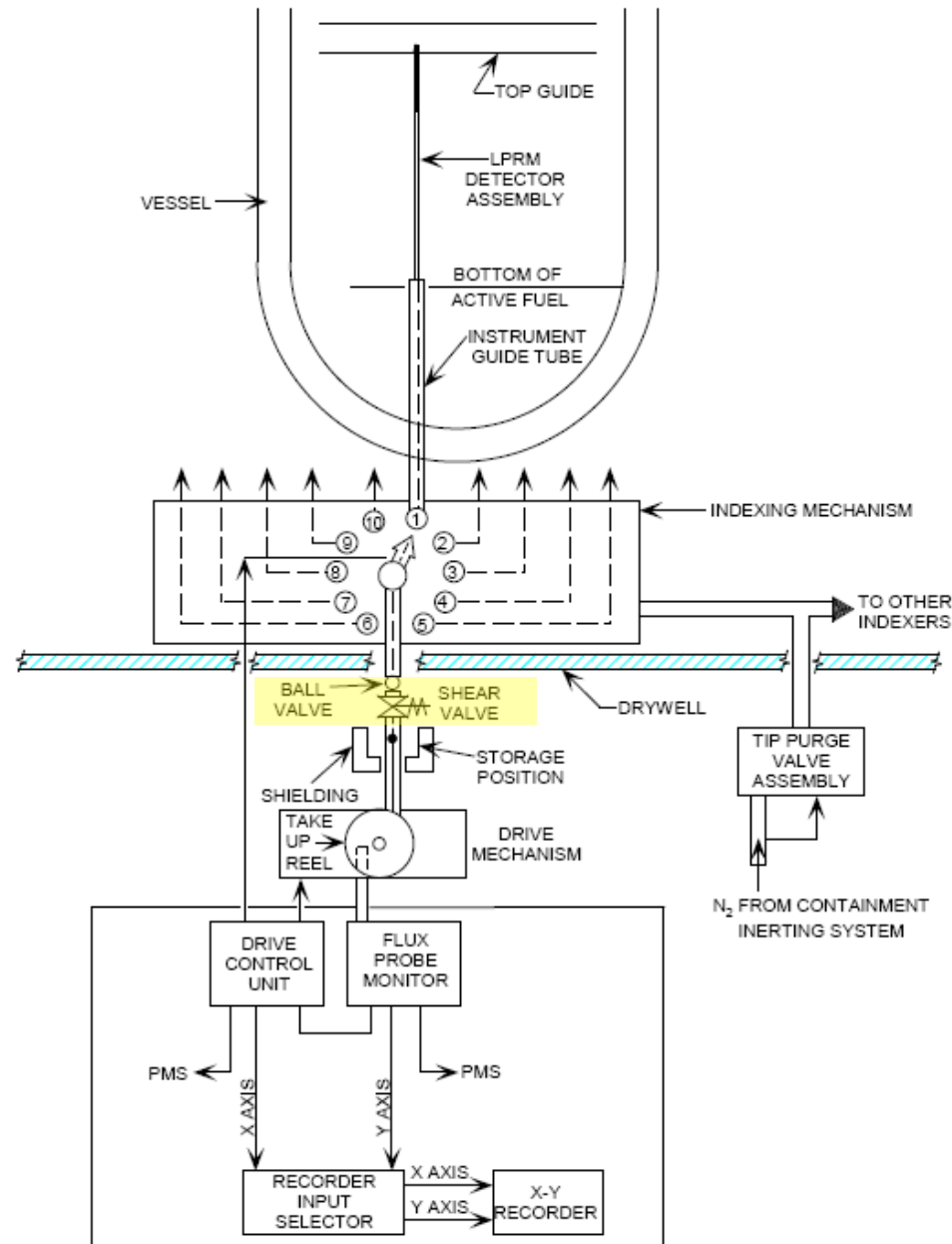
Objective 2c

Drive Control Units



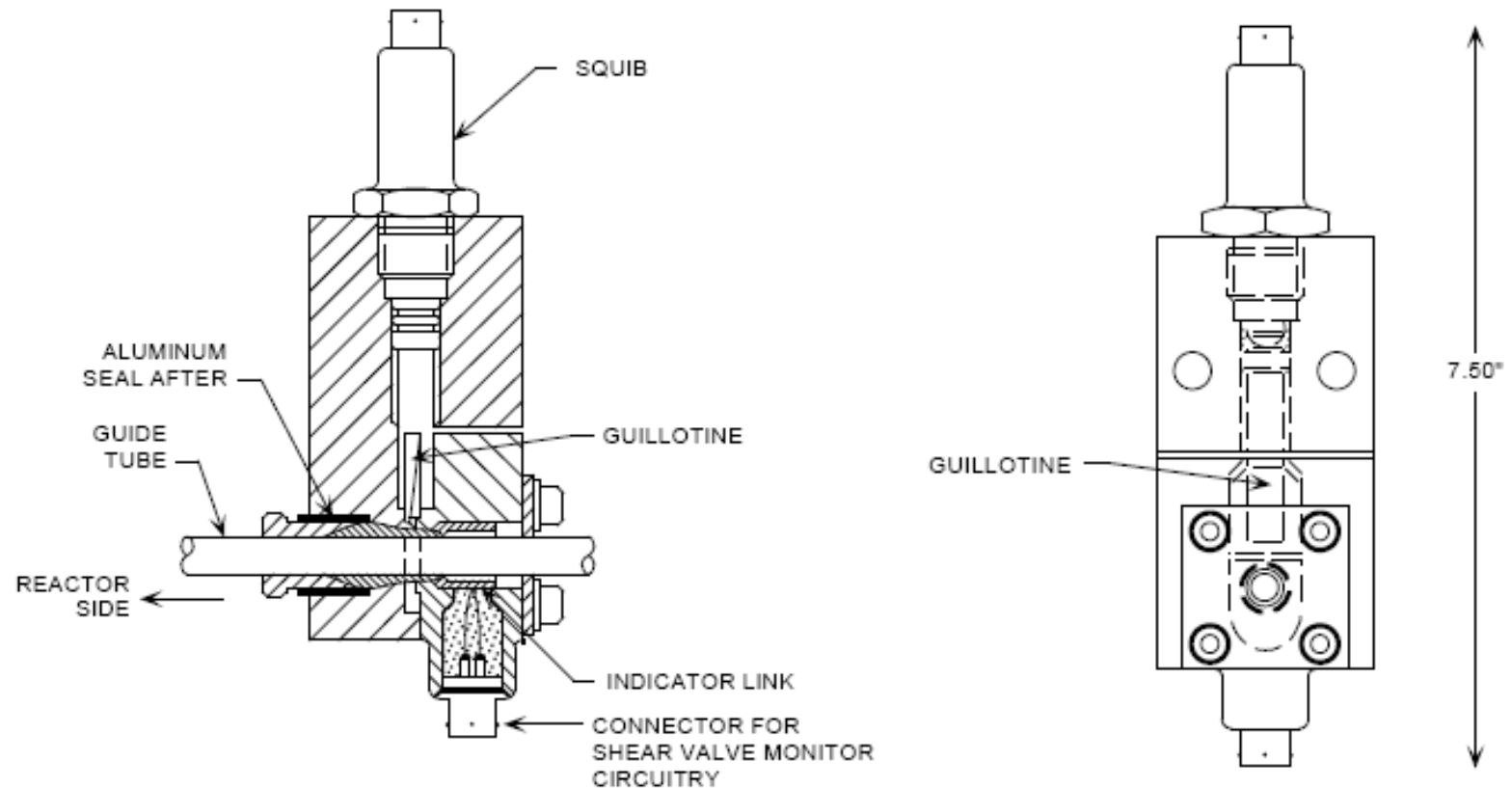
Schematic for one TIP machine (typical of 4 total machines)

Ball and Shear Valves



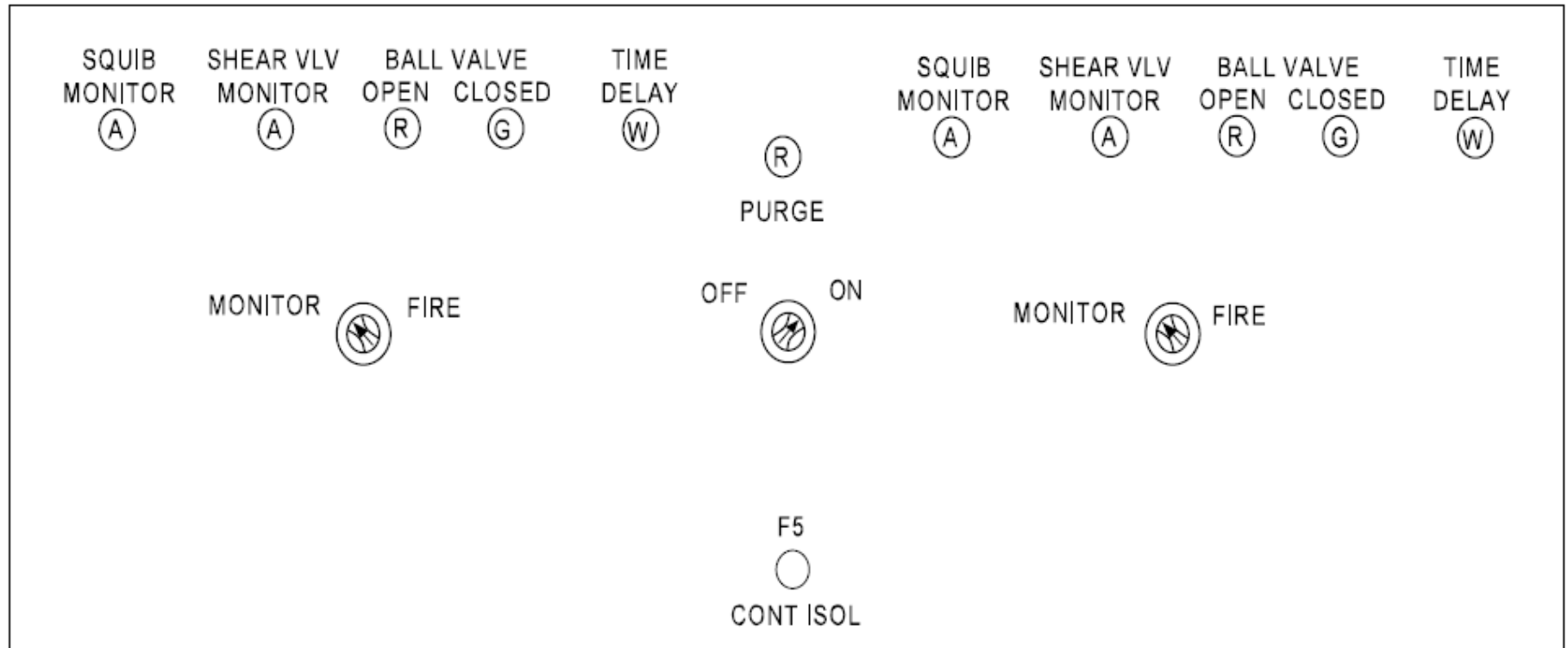
**Schematic
for one TIP
machine
(typical of 4
total
machines)**

Shear Valves



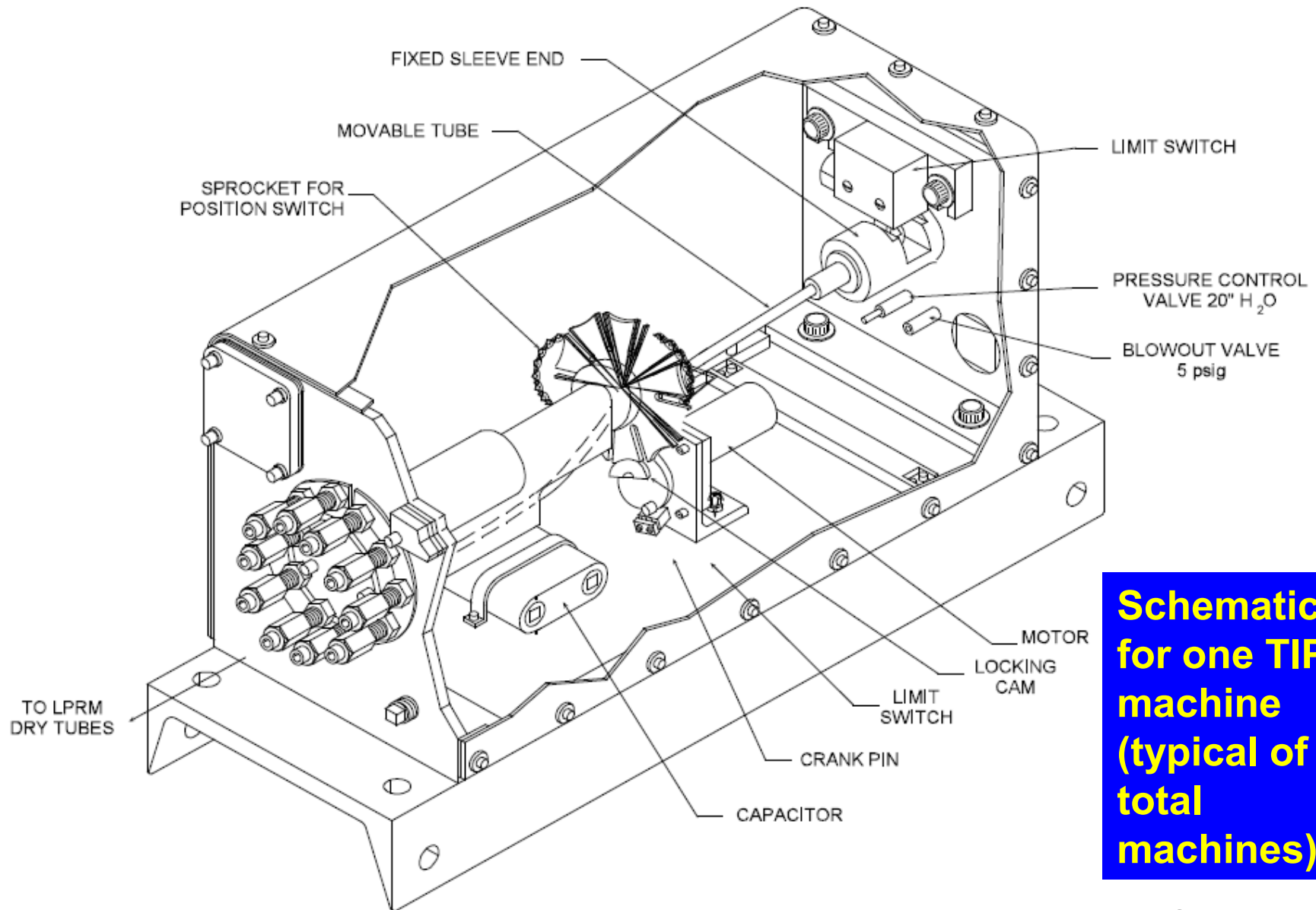
Schematic for one TIP machine (typical of 4 total machines)

Valve Control Monitor



Schematic for one valve control monitor panel (typical of 2 panels)

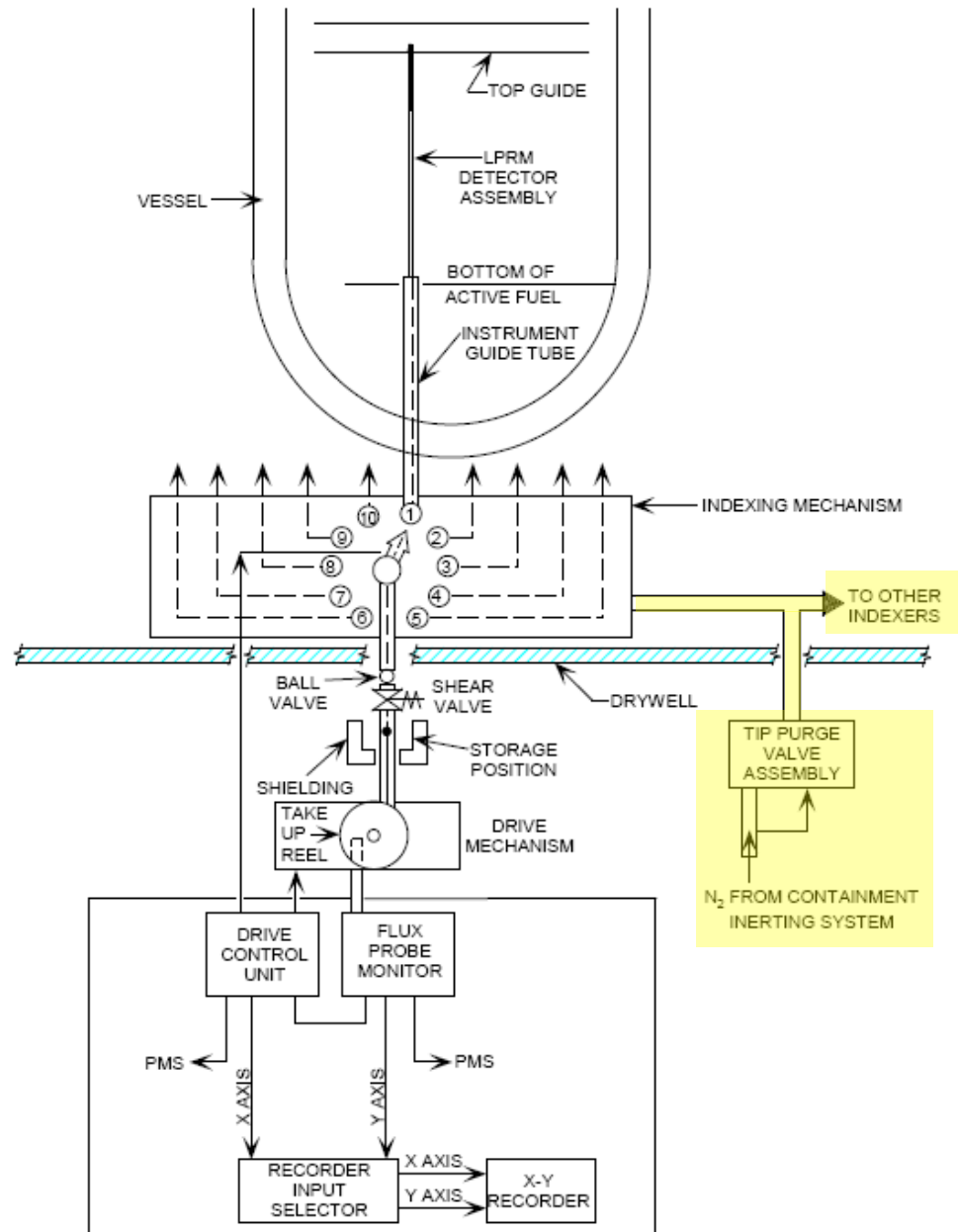
Indexing Mechanisms



**Schematic
for one TIP
machine
(typical of 4
total
machines)**

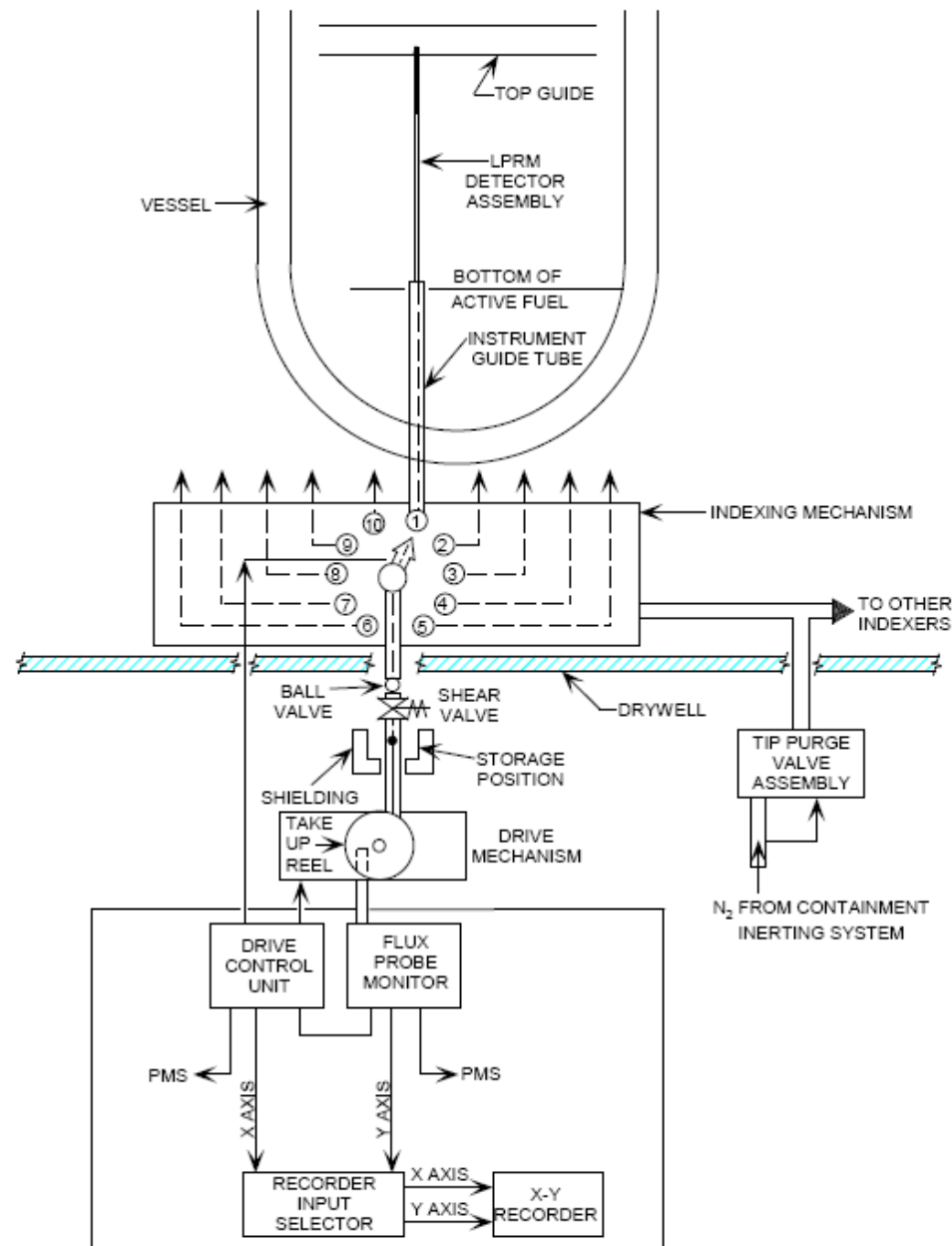
Objective 2e

TIP Purge System



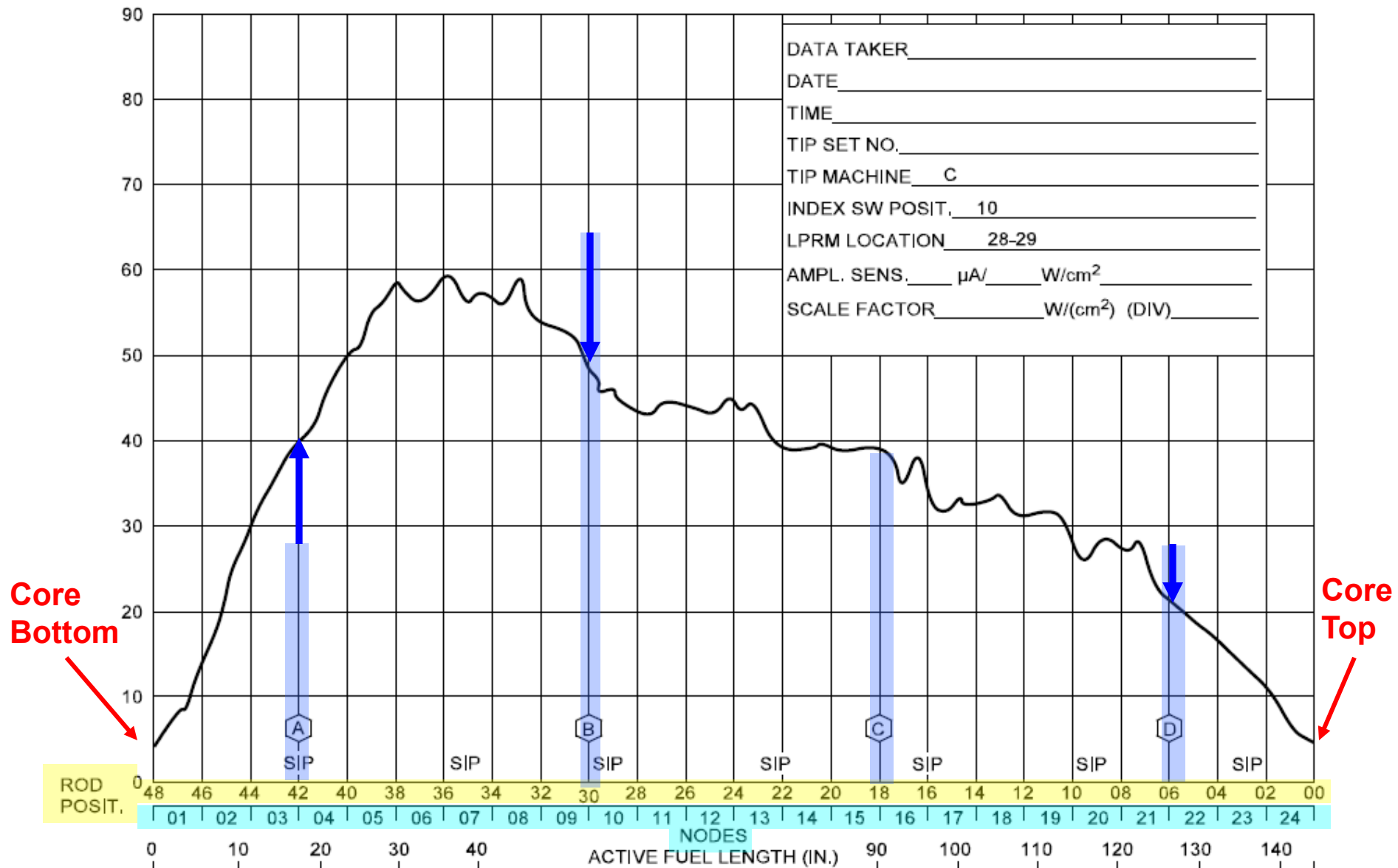
**Schematic
for one TIP
machine
(typical of 4
total
machines)**

System Interfaces



Objective 3

LPRM Calibration



Review Objectives

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Review Objectives (continued)

3. Explain the system's interfaces with:

- a) local power range monitoring system
- b) process computer system
- c) Service and instrument air system
- d) nuclear steam supply shutoff system
- e) containment inerting system

Are there any questions?